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Authors	Daniel Müller, Holger Angenent, David Antoš, Milan Daneček, Renato Furter, Ron Trompert

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# 1 Introduction

The goal of the European Open Science Cloud (EOSC) initiative is to offer European researchers a virtual environment with free, open, and seamless services for the storage, management, analysis and re-use of research publications, data and software that are linked to their research activities across borders and disciplines. The model proposed for EOSC is to federate existing and newly developed research data infrastructures under a common governance structure.

One of these newly developed research infrastructures is the Science Mesh which is being developed during the course of the CS3MESH4EOSC project. The Science Mesh is designed to be a federation of Enterprise File Sync and Share (EFSS) services allowing users not only to share data but also applications. The Science Mesh uses a collection of very lightweight central services which are needed for management of the infrastructure, but which are not critical for the day-to-day operation, see deliverable D2.2<sup>1</sup> Section 2. The Science Mesh consists of several Sites running their own EFSS systems. Each of the Sites is expected to be financially sustainable, self-sufficient and autonomously defining own policies and procedures related to user management, data handling, operations, privacy and security. A Higher-level policies and procedures which are Science Mesh specific are described in the deliverables D2.2 and D2.4<sup>2</sup>, together with a governance structure form the non-technical backbone of the Science Mesh. D2.2 describes the governance structure as well as the operational procedures. It describes security-related aspects of the Science Mesh such as a privacy policy<sup>3</sup>, a service operations security policy<sup>4</sup> and an incident response procedure<sup>5</sup>. Similarly, to the central components of the Science Mesh, also the central operational procedures are designed to be lightweight in order to keep the necessary overhead costs to a minimum.

In this document, a short overview is given about the developments around EOSC in section 2. The place within the EOSC landscape of the Science Mesh is given in section 3. Section 4 describes how the Science Mesh can join the current EOSC-related activity. A description of the requirements that the Science Mesh needs to fulfil is also given in this section. At the time of writing, the Science Mesh is not ready yet to integrate with EOSC. There are still gaps that need to be filled. This is also described in section 4 as well as the steps that still need to be taken to fill these gaps. This document concludes with some final remarks in Section 5.

## 2 European Open Science Cloud

### 2.1 About EOSC

The ambition of the European Open Science Cloud (EOSC) is to provide European researchers, innovators, companies and citizens with a federated and open multi-disciplinary environment where they can publish, find and reuse data, tools and services for research, innovation and educational purposes.

This environment will operate under well-defined conditions to ensure trust and safeguard the public interest.

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<sup>1</sup><https://doi.org/10.5281/zenodo.5602984>

<sup>2</sup> D2.4 is being finalized at the time of writing.

<sup>3</sup><https://doi.org/10.5281/zenodo.6089064>

<sup>4</sup><https://doi.org/10.5281/zenodo.6279398>

<sup>5</sup><https://doi.org/10.5281/zenodo.6276063>

The EOSC enables a step change across scientific communities and research infrastructures towards seamless access, FAIR management, reliable reuse of research data and all other digital objects produced along the research life cycle (e.g. methods, software and publications).

The European Open Science Cloud (EOSC) ultimately aims to develop a 'Web of FAIR Data and services' for science in Europe upon which a wide range of value-added services can be built. These range from visualisation and analytics to long-term information preservation or the monitoring of the uptake of open science practices.

## 2.2 The EOSC Architecture

The architecture<sup>6</sup> of EOSC is shown in Figure 1. The fundamental components of EOSC are EOSC-core and EOSC-exchange. EOSC-core offers central services needed to operate EOSC with its constituents e-infrastructures. Services like monitoring and accounting, the helpdesk and AAI are part of EOSC-core but also policies like the rules of participation. EOSC-exchange is the user-facing part of EOSC.

At the top of the EOSC-exchange layer there are the vertical pillars that represent the communities centred around distinct themes or scientific disciplines. Each of them has their own e-infrastructure set up for their own community with services, portals and research products. Below the pillars in the EOSC-exchange layer are the so-called horizontal services. These are services that are not specifically linked with a certain science discipline. An example of such a service is a data transfer service. It is irrelevant for such a service whether Life Science data is transferred or High-Energy Physics data.

The focus on building EOSC is to build a system of systems, meaning that there are already a number of e-infrastructures in place and they will continue to be used. No wheels are to be reinvented. Apart from leveraging already existing services, the focus is on the interoperability between these e-infrastructures and on the ability to be able to use research products residing in the EOSC-core layer. The interoperability layer is depicted at the right hand side of Figure 1. Naturally, there is also support involved which is shown at the left side.

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<sup>6</sup><https://edu.nl/mumgx>

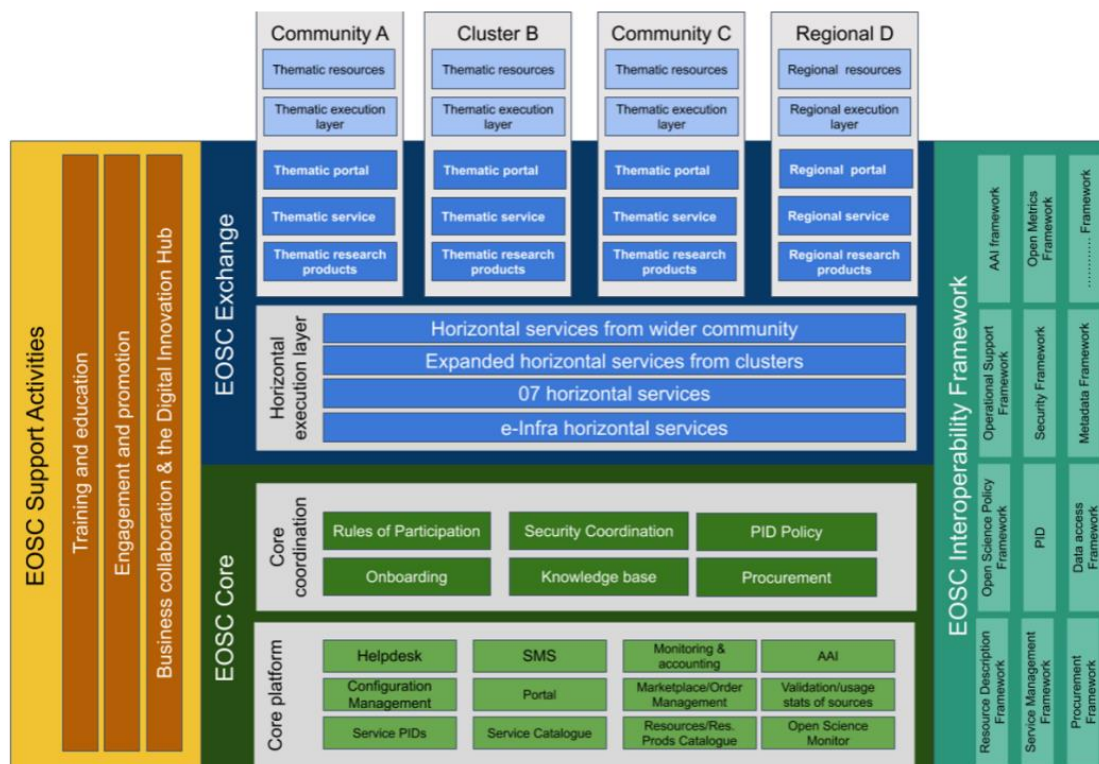


Figure 1: The EOSC Architecture

EOSC should enable researchers to share knowledge across the various disciplines. Research products should be stored within the EOSC infrastructure and researchers from all disciplines should be able to find and re-use them with the help of the interoperability layer.

### 3 EOSC and the Science Mesh

The Science Mesh has had a very different history than other e-infrastructures involved with EOSC. Unlike the latter infrastructures who came to be, starting from (EU-)funded projects, the Science Mesh evolved from a grassroots community of organisations running EFSS services for their own users, who decided to offer added value to their users by federating their services. This has led to the CS3MESH4EOSC proposal which was granted in 2019 and started in January 2020.

EFSS services have become quite successful over the last decade or so, both on-premise and in the cloud. The EFSS market has been growing ever since these services hit the market. The EFSS market is projected to grow from USD 6.1 billion in 2021 to USD 20.5 billion by 2026 with a compound annual growth rate of 27.3%<sup>7</sup>. Figure 2 below also shows this.

<sup>7</sup><https://edu.nl/it36u>

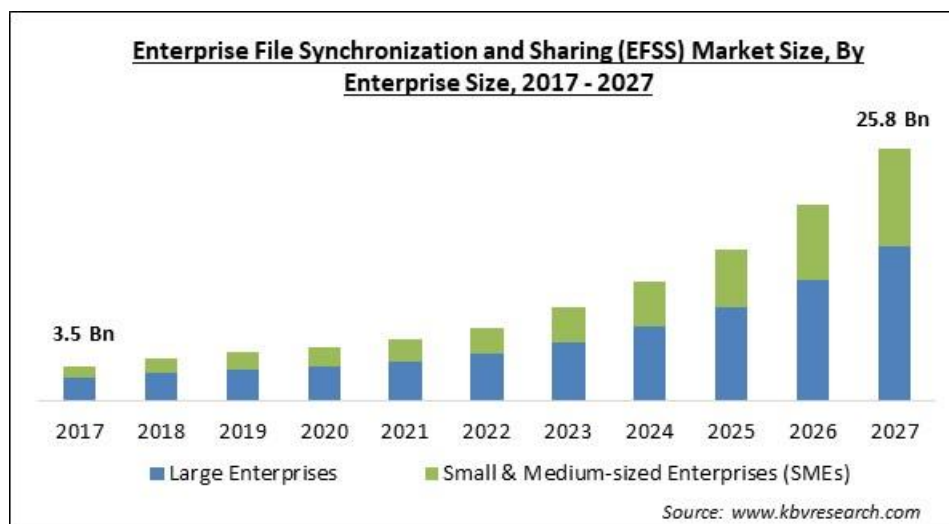


Figure 2: Growth of the EFSS market<sup>8</sup>

Not only in business EFSS have become very popular. The same is true for science and education as well. During the CS3 2022<sup>9</sup> conference, a survey<sup>10</sup> was held among the sites present that run EFSS services. There we 14 sites responded to the survey and together they served more than 530000 users and stored over 25PB of data. The reason for their success is quite obvious. They provide a low-threshold access to data and an easy way to share data with people you collaborate with. Wherever you go, your data goes with you, either in the cloud or synced to your laptop. Moreover, your data is also accessible from mobile clients. This is very appealing to many people including people who are less tech-savvy. Over the years EFSS services in the business domain did not stick to just sync and share but they we also integrated with all kinds of business applications. For science and education, a similar thing happened. Here EFSS services were integrated with science applications, like Jupyter notebooks, the Open Science Framework (OSF), R-Space and learning platforms such as Moodle. All these add-ons make these services even more attractive to users.

EOSC envisages that user communities are already organised to some extent and already have an e-infrastructure for their own community at their disposal with an entry point (e.g. portal) and other services. Their focus is on serving users in a particular science domain. The Science Mesh, however, has a much more general nature than these thematic e-infrastructures. It is science-agnostic and of general use. The Science Mesh is a federated infrastructure consisting of EFSS services run by organisations amongst which are NRENs, national e-infrastructures, university compute centres and ICT service providers for academia. Those organisations are, in general, already serving science at large and not targeting any particular discipline. For this reason, we believe that the Science Mesh qualifies as a horizontal service in the EOSC architecture.

However, there is an additional benefit of the Science Mesh being a service integrated in EOSC. Many individual researchers and research groups are not part of any internationally organised community, let alone have their own e-infrastructure. They are also collaborating with other researchers across organisational and national boundaries. This is where the Science Mesh can contribute to EOSC by connecting also these users to the FAIR data and other research products in EOSC using their own home EFSS service. Serving a huge number of users is where EFSS services are shining. There are about 1.89 million researchers in Europe<sup>11</sup> and presently deployed EFSS services for

<sup>8</sup><https://www.kbvresearch.com/enterprise-file-synchronization-and-sharing-market/>

<sup>9</sup><https://www.cs3community.org/2022/>

<sup>10</sup><https://cds.cern.ch/record/2802081>

<sup>11</sup>[https://ec.europa.eu/eurostat/statistics-explained/index.php?title=R%26D\\_personnel&oldid=551400](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=R%26D_personnel&oldid=551400)



research and education reach several hundreds of thousands of users. This implies that EFSS services have the ability to serve a substantial part of the European research community.

## 4 Joining EOSC

### 4.1 Interfacing with EOSC

Since the Science Mesh is meant to be part of the EOSC exchange layer as a horizontal service, it needs to be interfaced with the EOSC core layer (see Figure 1). However, at the time the CS3MESH4EOSC proposal was written, about 4 years ago, EOSC was still in development and the final EOSC architecture was yet to be determined. Discussions in EOSC community were ongoing and the EOSC landscape was in a state of flux. At that time, the EOSC hub<sup>12</sup> was running which aimed to create an integration and management system for the future EOSC delivering a catalogue of services, software and data from existing e-infrastructures. With this in mind the CS3MESH4EOSC proposal was written and the necessary effort budgeted. EOSC hub ended in March 2021 and has been succeeded and replaced by the EOSC future<sup>13</sup> project.

The EOSC future project has picked up where EOSC hub left off and aims to consolidate, integrate and connect e-infrastructures, research communities and initiatives in Open Science. It does so by further developing of the EOSC portal, EOSC core, EOSC exchange and the EOSC interoperability framework.

The EOSC future project is still in full swing and runs until September 30<sup>th</sup> 2023. As this project progresses, services are being put into production like, for example, the EOSC helpdesk<sup>14</sup> in the EOSC core. There is going to be the HORIZON-INFRA-2023-EOSC-01-04 call in spring 2023 that aims to further continue with the EOSC core development. The work on EOSC is to continue for years to come.

This implies that integration plans for ScienceMesh had to be constantly reviewed and adopted to the changing EOSC landscape. At present this landscape has been substantially clarified but not yet finally settled. For example, the original workplan of the CS3MESH4EOSC project stated that the Science Mesh is to be included in the EOSC-hub catalogue. However, since EOSC-hub has been succeeded by EOSC-future we aim for inclusion in the EOSC-future catalogue.

With more visibility on the requirements and architecture of EOSC, especially services in EOSC-core, we analysed current inclusion criteria and anticipated the necessary work. However, several integration aspects will fall beyond the scope and timeline of the CS3MESH4EOSC project and will need to be undertaken further down the line as community effort.

EOSC-future is an ongoing project with evolving outcomes and we need to adapt. In the rest of this document we focus on the current view on the requirements, inclusion criteria and technical aspects of becoming a service provider and offer services to users withing the EOSC service catalogue.

### 4.2 Inclusion Criteria

A number of criteria has been defined that are used to validate Providers and Resources that are

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<sup>12</sup><https://doi.org/10.3030/777536>

<sup>13</sup><https://doi.org/10.3030/101017536>

<sup>14</sup><https://eosc-helpdesk.eosc-portal.eu>

to be onboarded within the EOSC Service Portfolio. The criteria described in Appendix A are the ones that were in place at the time of writing. However, these criteria are still under development by members of EOSC future and formerly EOSC Enhance<sup>15</sup> and EOSC-hub. Moreover, EOSC Association AISBL<sup>16</sup> may define additional criteria and therefore, these criteria are subject to change in the future. The most current information on the criteria may be found at [eosc-portal.eu](http://eosc-portal.eu) website<sup>17</sup>.

At the time of writing, these criteria are the following:

1. What groups can onboard to EOSC as a Provider?
2. Who can onboard resources to EOSC?
3. What resources may be connected to EOSC?
4. A provider profile and resource for every resource profile must be filled in, including at a minimum all required fields.
5. Resources must be both available in Europe and available in a European language.
6. Providers must keep their data up to date.

The first criterion requires that the organisation that onboards as a provider needs to be a legal entity, for the reasons of legal accountability for the operation of the service. In case of the Science Mesh, the Science Mesh needs to be a legal entity itself (which is not yet the case at the moment of writing this document) or use a so-called hosting legal entity affiliated with the Science Mesh which will take legal responsibility for the resources being onboarded to EOSC. The hosting legal entity needs to be onboarded first as an EOSC provider.

The provider needs to deliver the service and remove them from the portal when they are no longer available. This is required by the second criterion.

The third criterion requires that only services or research products can onboarded. Services can exist on their own and not be a feature of a larger service and be of reasonable maturity which is specified as TRL7<sup>18</sup> or above. TRL8 is required for integration of ordering. The services must be targeted towards EOSC and EOSC communities and leverage EOSC capabilities to serve other communities. In short, this means that the service has to be accessible by users outside of the original user community<sup>19</sup>.

Further, the fourth criterion requires a provider profile to be filled in and specifies that information is available in English. In particular, the user interface must be in English as well as the privacy statements, terms of use and service level agreements which providers also need to have in place. The helpdesk must also be able to answer questions in English. The fifth and sixth criterion deal with the fact that resources must be available in Europe and target European users and that providers need to keep their information up to date.

### 4.3 Onboarding process

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<sup>15</sup><https://doi.org/10.3030/871160>

<sup>16</sup><https://www.eosc.eu/>

<sup>17</sup><https://eosc-portal.eu/providers-documentation/eosc-provider-portal-inclusion-criteria>

<sup>18</sup>[https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014\\_2015/annexes/h2020-wp1415-annex-g-trl\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf)

<sup>19</sup><https://providers.eosc-portal.eu/becomeAProvider>

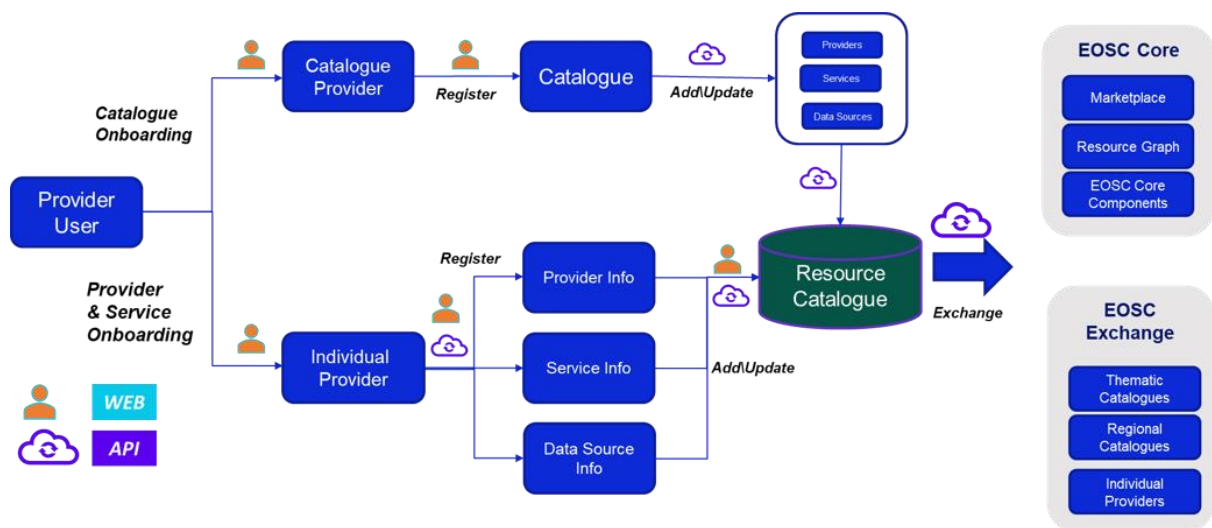


Figure 3: Onboarding process

The onboarding process is shown in Figure. There are two distinct paths for onboarding resources to the EO SC catalogue. The first one is onboarding as a single provider. The second one is onboarding as a “catalogue owner representative” who onboards a catalogue, or in other words, a collection of resources. If the catalogue is approved then providers and services etcetera can be onboarded by the catalogue owner representative. The onboarding process is handled by the EO SC Portal Onboarding Team.

#### 4.4 Profiles

Information about resources, providers and catalogues need to be provided in the form of filling in profiles. Information on these profiles and the information they contain may be found at URLs given in Table 1 and described briefly in the tables 2, 3 and 4.

<b>Profile type</b>	<b>URL</b>
<b>Catalogue profile</b>	<a href="https://wiki.eoscfuture.eu/display/PUBLIC/C.+v4.00+EOS+C+Multi-Provider+Catalogue+Profile">https://wiki.eoscfuture.eu/display/PUBLIC/C.+v4.00+EOS+C+Multi-Provider+Catalogue+Profile</a>
<b>Provider profile</b>	<a href="https://wiki.eoscfuture.eu/display/PUBLIC/A.+v4.00+EOS+C+Provider+Profile">https://wiki.eoscfuture.eu/display/PUBLIC/A.+v4.00+EOS+C+Provider+Profile</a>
<b>Resource profile</b>	<a href="https://wiki.eoscfuture.eu/display/PUBLIC/B.+v4.00+EOS+C+Resource+Profile">https://wiki.eoscfuture.eu/display/PUBLIC/B.+v4.00+EOS+C+Resource+Profile</a>

*Table 1: Information on catalogue, provider and resource profiles*

<b>Information type</b>	<b>Description</b>
<b>Basic information</b>	Catalogue ID, names, web site URLs etcetera, legal entity and legal status
<b>Marketing information</b>	Logo's, descriptions, multimedia URLs and so on
<b>Classification information</b>	Scientific domains, subdomains, tags
<b>Location information</b>	Country, postal address, visiting address
<b>Contact information</b>	Names of contacts, phone number, email addresses

*Table 2: Information in the catalogue profile*

<b>Information type</b>	<b>Description</b>
<b>Basic information</b>	Provider ID, names, web site URLs etcetera, legal entity and legal status
<b>Marketing information</b>	Logo's, descriptions, multimedia URLs and so on
<b>Classification information</b>	Scientific domains, subdomains, tags
<b>Location information</b>	Country, postal address, visiting address
<b>Contact information</b>	Names of contacts, phone number, email addresses
<b>Maturity information</b>	Status of provider life cycle, certifications
<b>Dependency information</b>	Participating countries, organisations affiliated with, networks, the ID of the catalogue this provider is registered at

*Table 3: Information in the provider profile*

<i>Information type</i>	<i>Description</i>
<b>Basic information</b>	Resource ID, names, web site URLs etcetera, legal entity and legal status
<b>Marketing information</b>	Logo's, descriptions, multimedia URLs and so on
<b>Classification information</b>	Scientific domains, subdomains, tags
<b>Geographical and language availability information</b>	Locations, languages
<b>Resource location information</b>	ISO 3166 standard code for the resource location except Greece (EL) and United Kingdom (UK)
<b>Contact information</b>	Names of contacts, phone number, email addresses
<b>Maturity information</b>	Status of provider life cycle, certifications
<b>Dependency information</b>	Participating countries, organisations affiliated with, networks, the ID of the catalogue this provider is registered at

*Table 4: Information in the resource profile*

## 4.5 Onboarding the Science Mesh, Existing Gaps and Fixes

The Science Mesh is an e-infrastructure in its own right, with its own policies and procedures, technologies and protocols. It is therefore obvious that joining EOSC as a separate e-infrastructure is the way forward. Hence, the steps should include first the registration in the EOSC catalogue of the Science Mesh infrastructure and then registration of the individual Science Mesh sites afterwards in this catalogue. There are a few open questions that need to be addressed. The first one has to do with the legal entity. Either the Science Mesh needs to be established as a separate legal entity or one of the current CS3MESH4EOSC partners is going to act as a so-called “hosting legal entity”. It is expected that establishing a separate legal entity will happen beyond the CS3MESH4EOSC project lifetime. Appointing one of the current project partners as a hosting legal entity is the most realistic way forward. This topic needs to be further discussed among the CS3MESH4EOSC partners but it is expected that this will not be a major issue.

The maturity level is another topic that needs attention. For services TRL7 is required as a very minimum to be admitted in the EOSC catalogue and expected soon to be TRL8 if it is not that already. Science Mesh Inter Operability Platform (IOP) is currently being integrated with existing Owncloud- and Nextcloud-based EFSS services. The backend has been extensively tested already, the frontend integration with EFSS is still under testing at the time of writing. It is expected that the technical components delivered by the CS3MESH4EOSC project are at a suitable TRL level by the end of this project. This means that the inclusion in the EOSC portal could be taking place during the same time frame.

The Science Mesh consists of sites running existing EFSS services for their own constituency. One of the criteria was that these services must be accessible also for users outside of this constituency. There are some sites that have guest accounts to cater for this need. But then of course, these users need to be invited by the original users of that EFSS service. This will solve only a part of this issue since only users collaborating with other users that have access to an EFSS will have access to the infrastructure. Therefore, a catch-all EFSS node which is open to researches without their own EFSS node and integrated with Science Mesh would solve this problem.

At the moment we are in the process of including the B2DROP service from EUDAT<sup>20</sup> into the Science Mesh. B2DROP is open to users that do not have access to an EFSS service through the organisation they are affiliated with or through researchers they are collaborating with who have access to an EFSS services with guest accounts. Therefore, B2DROP can serve as a catch all EFSS service. B2DROP can be purchased but funding for its usage is available through the DICE<sup>21</sup> project. The DICE project will stop at the same time as CS34EOSC will end so at least for the duration of the CS3MESH4EOSC project, funding will be available for people to access the Science Mesh through B2DROP. After the DICE project ends, it will still be possible to use B2DROP but then there will be costs involved.

Another opportunity to provide a catch-all EFSS node emerged through the CNECT procurement by the European Commission (CNECT/LUX/2022/CD/0023<sup>22</sup>). The EC seeks to procure managed services for the European Open Science Cloud. The procurement exists of three lots where lot 3 called “Managed Collaborative Data Platform, Interactive Data Analytics Platform and Visualisation Services for the EOSC Exchange” is the most relevant for the CS3MESH4EOSC project. This lot consists of three components, file synchronisation and sharing services, an interactive notebook service and large file transfer services. All three components are addressed by the CS3MESH4EOSC project. The procurement was published in December 2022 and the procured services are due to be provisioned in September 2023.

The final issue that needs to be dealt with is a terms of use, privacy statement, and service level agreement that needs to be in place. The privacy statement<sup>23</sup> is already in place for the Science Mesh itself. However, every Science Mesh site needs to have a privacy policy in place for their own users. The same holds for terms of use document and a service level agreement. Both having a privacy policy and terms of use policy are sites required to have in order to join the Science Mesh<sup>24</sup>. However, nothing is specified with respect to service level agreements. This is an issue that still needs to be addressed. The Science Mesh users do not login into the entire e-infrastructure but into a single node on the Science Mesh. In a number of cases such a node would have an SLA with its local users. In case it hasn't, a default SLA can be put in place stating that no guarantees are given and that service delivery is on a best effort basis.

## 5 Concluding Remarks

In this document an overview is given of how the Science Mesh can be included as a service in the EOSC-Future structures. The positioning of the Science Mesh within EOSC is discussed, as well as EOSC integration which includes the requirements and the onboarding process. The gap analysis of the EOSC-future catalogue inclusion criteria and the state of the art Science Mesh federation have been identified and possible solutions discussed. The solutions described in Section 4.5 will allow the Science Mesh to be readily included in the EOSC catalogue.

However, it will not stop there. EOSC-core is going to deliver other types of services which functionally overlap with some of the Science Mesh central services. Examples are monitoring, the helpdesk, the AAI infrastructure or service catalogue. Reuse of such general EOSC core services in the

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<sup>20</sup><https://eudat.eu/>

<sup>21</sup><https://cordis.europa.eu/project/id/101017207>

<sup>22</sup> CNECT/LUX/2022/CD/0023: **Managed Collaborative Data Platform Services for the EOSC Exchange**, <https://ted.europa.eu/udl?uri=TED:NOTICE:234660-2022:TEXT:EN:HTML>

<sup>23</sup><https://doi.org/10.5281/zenodo.6089064>

<sup>24</sup><https://doi.org/10.5281/zenodo.5040087>

context of Science Mesh would be the next natural step and it will be subject for future investigation beyond the scope of the current CS3MESH4EOSC project.

# Appendix A

Home » Providers Documentation » EOSC Provider Portal - Inclusion Criteria

## EOSC Provider Portal - Inclusion Criteria

The following criteria are currently used to validate Providers and Resources to be onboarded within the EOSC Service Portfolio. The criteria are still under development by a joint team consisting of members of EOSC Future and EOSC Enhance (and formerly EOSC-hub). The EOSC AISBL may define broader criteria, therefore the criteria are subject to change in the future.

**Providers Documentation**

- EOSC Data Source Profile
- EOSC Multi-Provider Catalogue Profile
- EOSC Portal Onboarding Process
- EOSC Provider Portal - Basic Guide
- EOSC Provider Portal - Inclusion Criteria

- What groups can onboard to EOSC as a provider?
  - Any group can onboard to EOSC as a Provider, as long as it fills the necessary information in the EOSC Provider Profile.
  - Those onboarding as a provider should **either** be a legal entity **or** connect to the registration of a hosting legal entity already onboarded as a provider under their own profile.
- Who can onboard resources to EOSC
  - Providers onboarding a resource must assert that they are able to ensure the resource is delivered by them or their collaborators and agree to remove resources that are no longer operational or available.
  - Resources should be onboarded by the coordinating or lead provider in case of a federates or jointly provided resource (they are the 'Resource Organisation). Other onboarded providers may be added as supporting or supplementary providers ('Resource providers).
- What resources may be connected to EOSC?
  - Services. At present only services are being onboarded.
    - It must be a specific service offered 'live' to customers [1]. This may be an IT service, or a human service (e.g. training, consultancy)..
    - It may not be a research product, for instance, a document, a dataset or a piece of software [2].
    - The Service must be discrete. It must be available and offer value on its own. It may not be only a feature of a larger service available while already using that service.
    - The Service must be of a reasonable maturity, Technology Readiness 7 or above in order to be listed in the catalogue (and TRL8 or above to allow for integration of ordering)
    - Services must meet at least one of:**
      - The service must be targeted to EOSC and EOSC communities [3].**
      - The service must build on or leverage EOSC capabilities to serve some other community.[4]**
  - Other resources, such as research products (data sets, publications, software and other types) will be able to be onboarded at a later date.
    - NOTE: while research products are not being directly onboarded, services that contain them such as data, software or publication repositories can be onboarded as services.
- A provider profile and resource profiles for each resource must be filled, including at a minimum all required fields.
  - URLs must be Fully Qualified Domain Names (FQDN)
  - Key information must be in English due to the limitations of current project resources (thought this may change in future)
    - The provider and resource profiles must be in English
    - The basic information in the User Interface for the service must be available in English
    - Privacy statements, terms of use and Service Level Agreements, Specifications and Descriptions must be available in English. Other documentation may be in the native language only.
    - The Helpdesk or support function must be able to answer queries in English at a minimum.
- Resources must be both available in Europe and available in a European language [5].
- The provider must agree to periodically update data on themselves and their resources to keep it current (to be covered in an EOSC Provider agreement, under development)

[1] Filling e.g. the definition according to [FitSM-0](#) - Service: Way to provide value to customers through bringing about results that they want to achieve. Note: In the context of the FitSM standard series, when referring to services, usually IT services are meant. From <https://www.fitsm.eu/download/280/> it should not be a generic menu of services from a provider, but the specific services themselves.

[2] A data repository service providing some annotation, tools over the data sets, enhanced features is likely a service. A simple link to a data file is not.

[3] For instance, could be a service from the research community for researchers, or if a commercial service, includes a clear offer targeted at EOSC and research customers which addresses them, rather than be a generic commercial service. One example of the latter is a joint procurement framework targeting EOSC.

[4] For instance, services through the Digital Innovation Hubs which build on EOSC expertise, resources and capabilities to create new, innovative commercial services

[5] See [https://europa.eu/european-union/about-eu/eu-languages\\_en](https://europa.eu/european-union/about-eu/eu-languages_en)

These criteria are managed by the EOSC Portal Onboarding Team: A collaboration of EOSC Future and EOSC Enhance (Formerly also including EOSC-hub, OpenAIRE Advance and InfraCentral). They are developed in light of the evolving EOSC Rules of Participation, which provide higher-level guidance. If you have an enquiry or concern about these criteria please contact [onboarding@eosc-portal.eu](mailto:onboarding@eosc-portal.eu).

Figure 4: EOSC Provider Portal Inclusion Criteria